

# User's Manual

**PBM4**

**PBM MONITOR**



**ALTO®**  
[www.altoproaudio.com](http://www.altoproaudio.com)  
Version 1.0 April 2005  
— English —

## SAFETY RELATED SYMBOLS



 This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within in the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

 This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

 Protective Ground Terminal

 AC mains (Alternating Current)

 Hazardous Live Terminal

**ON:** Denotes the product is turned on.

**OFF:** Denotes the product is turned off.

### WARNING

Describes precautions that should be observed to prevent the possibility of death or injury to the user.

### CAUTION

Describes precautions that should be observed to prevent damage to the product.

### WARNING

#### • Power Supply

Ensure that the mains source voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user. Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

#### • External Connection

Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

#### • Do Not Remove Any Covers

Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed.

**Covers should be removed by qualified service personnel only.**

No user serviceable parts inside.

#### • Fuse

To prevent fire and damage to the product, use only

the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

#### • Protective Ground

Before turning the product ON, make sure that it is connected to Ground. This is to prevent the risk of electric shock.

Never cut internal or external Ground wires. Likewise, never remove Ground wiring from the Protective Ground Terminal.

#### • Operating Conditions

Always install in accordance with the manufacturer's instructions.

To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture. Do not use this product when in close proximity to water.

Do not install this product near any direct heat source.

Do not block areas of ventilation. Failure to do so could result in fire.

Keep product away from naked flames.

## IMPORTANT SAFETY INSTRUCTIONS

Read these instructions

Follow all instructions

Keep these instructions. Do not discard.

Heed all warnings.

Only use attachments/accessories specified by the manufacturer.

#### • Power Cord and Plug

Do not tamper with the power cord or plug. These are designed for your safety.

Do not remove Ground connections!

If the plug does not fit your AC outlet seek advice from a qualified electrician.

Protect the power cord and plug from any physical stress to avoid risk of electric shock.

Do not place heavy objects on the power cord. This could cause electric shock or fire.

#### • Cleaning

When required, either blow off dust from the product or use a dry cloth.

Do not use any solvents such as Benzol or Alcohol. For safety, keep product clean and free from dust.

#### • Servicing

Refer all servicing to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.

## PREFACE

Dear customer

Thank you for choosing the **▲LTO PBM SERIES MONITOR - PBM4**, which is the result of our **▲LTO AUDIO TEAM's** endeavours.

For the **▲LTO AUDIO TEAM**, music and audio are more than a profession, it is a passion and an obsession!

We have, in fact, been designing professional audio products for a number of years in cooperation with many of the world's major brands.

The **▲LTO** line represents unparalleled analogue and digital products made by musicians, for musicians. With our design centres in Italy, the Netherlands, and United Kingdom we provide you with world-class designs, while our software development teams continue to develop an impressive range of audio specific algorithms.

By purchasing our **▲LTO** products you become the most important member of our **▲LTO AUDIO TEAM**. We would like to share with you our passion for what we design and invite you to make suggestions, which will aid us in developing future products for you. We guarantee you our commitment for quality, continual research and development, and of course the best prices.

The **▲LTO PBM4** is extremely flexible, ultra-low noise, which is configured with four MIC/line inputs channels, each of them is equipped with a variety of key features including a 2-band equalizer, one AUX send and level control etc.. Besides, the miraculous DSP with 16 presets and powerful digital power amplifier will meet your requirements.

We would like to thank all the people who made the **▲LTO PBM4** possible, especially to our designers and **▲LTO** staff. It is their passion for music and professional audio that has made it possible for us to offer you, our most important team member, our continued support.

Thank you very much

**▲LTO AUDIO TEAM**

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## 1. INTRODUCTION

Thank you very much for expressing your confidence in ▲LTO products by purchasing ▲LTO PBM4. The PBM4 is professional monitor, which provides the state of the art digital amplifier technology specifically. You will get the smooth, accurate, more natural and open sound from this apparatus, it is really ideal for small gigs, recording and fixed PA installations.

The PBM4 is packed with some key features. For example: there is four MIC/line inputs which provided with ultra low noise microphone pre-amplifiers and phantom power at +15V, each of them features a 2-band equalizer, one AUX send and level control. FX send and return, power amplifier outputs, monitor output plus Tape in/out and level controls, graphic equalizer for MAIN/MONITOR outputs, 16-position multi-effect and so on.

Though your PBM4 is very easy to operate, we strongly recommend you to go through each section of this manual carefully, in this way you will get the best out of your PBM4.

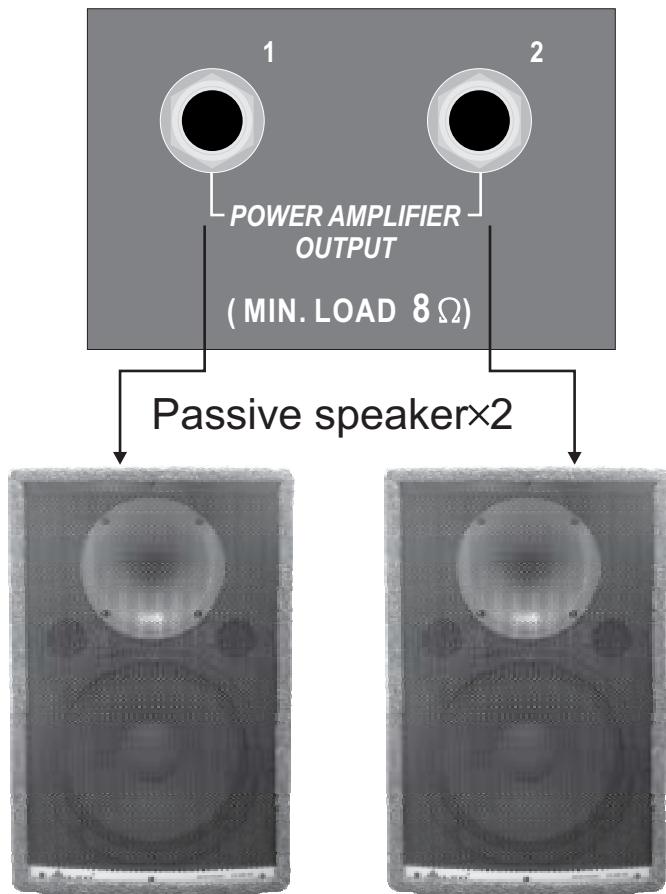
## 2. FEATURES

The PBM4 is designed for professional application. It provides the following features:

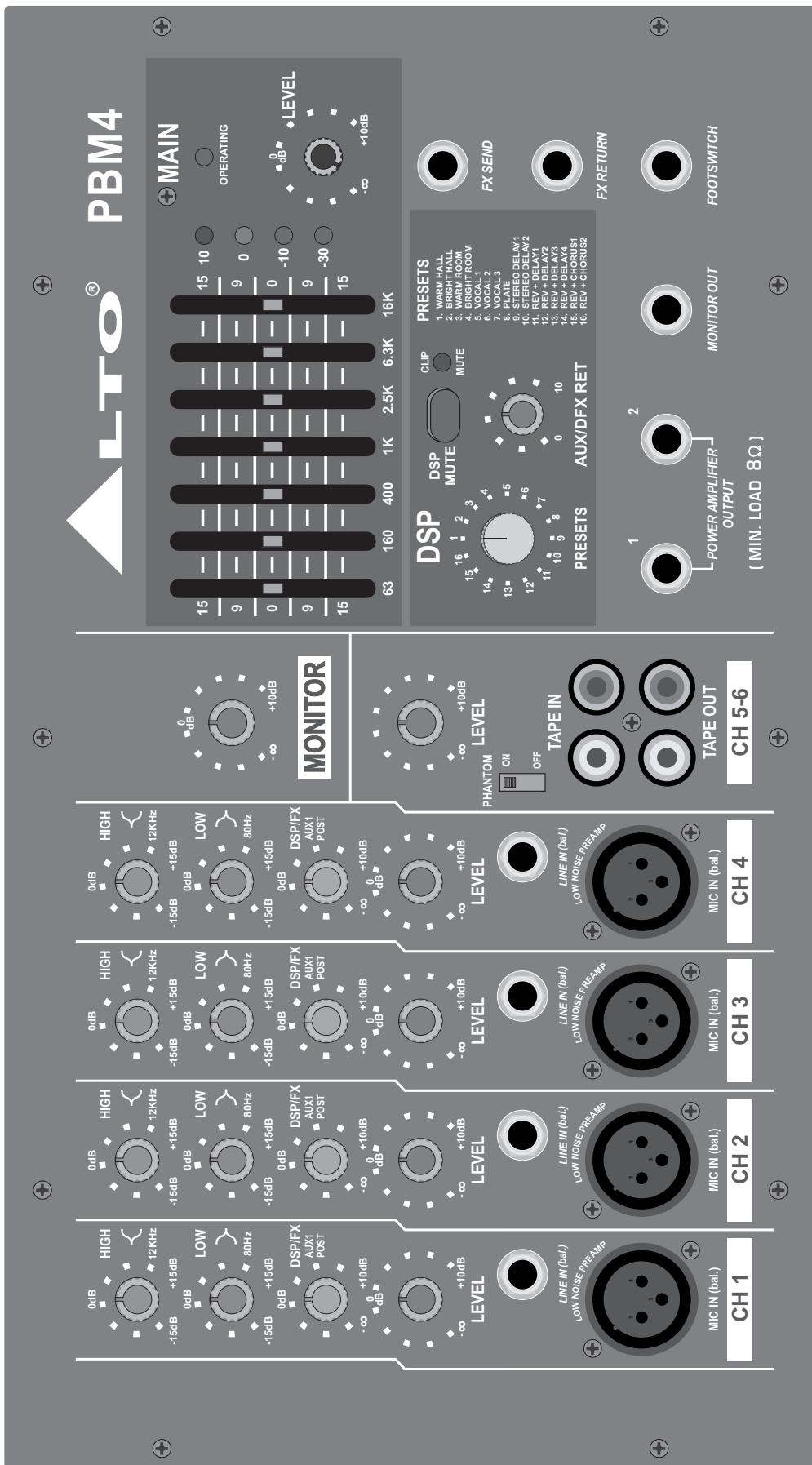
- Digital amplifier technology, offering high power and a very dynamic sound
- 7-band graphic EQ for MAIN/MONITOR
- 4 MIC/line input channels with balanced XLR and TRS inputs
- Ultra-low noise discrete MIC pre-amps with +15V phantom power
- 2-band EQ on mono input channels
- Each input channel with level control
- FX send for built-in or external effects, on-stage monitor mix
- Tape in/out
- 16-preset digital effect processor
- POWER OUTPUT: 150Wrms@8Ohm

### 3. QUICK START

- 3.1 Please check the AC voltage available in your country before connecting your PBM4 to the AC socket.
- 3.2 Be sure that the main power is turned off before connecting the monitor to the AC socket. Also, you should make sure that all input and output controls are turned down. This will avoid damage to your speakers and avoid excessive noise.
- 3.3 Please connect one side of the passive speaker cable to the POWER AMPLIFIER OUTPUT of your PBM4, and the other side to the input of your passive speaker cabinet.
- 3.4 Complete these connections as illustrated.
- 3.5 Before connecting and disconnecting the PBM4 always turn off the power switch.
- 3.6 Do not use solvents to clean your PBM4. A dry and clean cloth will be OK.



## 4. CONTROL ELEMENTS



## 4.1 MONO INPUT CHANNELS

1

There are CH1 through CH4, which comes with balanced MIC IN and LINE IN connectors. Use the XLR (MIC IN) socket to connect low impedance microphone or low level signal, which also features +15V phantom power allowing you to connect condenser microphone. Use the 1/4" TRS (LINE IN) jack to connect either a microphone or a line level instrument such as synthesizers, drum machines, effect processors or any other line level signal.

**Note:** You shall never connect an unbalanced microphone to the XLR socket if you do not want to damage both the microphone and the monitor.

## 4.2 +15V PHANTOM POWER SWITCH

2

This switch will apply +15 Volt Phantom Power only to the 4 XLR inputs sockets. When these XLR sockets are connected with devices that do not require Phantom Power, please make sure the Phantom Power is turned off, otherwise, this may damage the device and monitor.

## 4.3 LEVEL CONTROL

3

This control is used to adjust the overall level of respective channel. The adjustable range goes from  $-\infty$  to +10dB.

## 4.4 DSP/FX AUX1 POST CONTROL

4

This control is configured as POST-FADER, so the audio signal will be affected by channel level control. Via the FX SEND socket, the AUX1 signal can be sent to an external effect device.

## 4.5 EQUALIZER

Your PBM4 features a 2-band equalizer allowing you to adjust the high and low frequencies separately on each mono channel. Both bands provide up to +15dB of boost or cut.

**HIGH**

5

This is the treble control. You can use it to get rid of high frequency noises or to boost the sound of cymbals or the high harmonics of the human voice. The gain range goes from -15dB to +15dB with a center frequency of 12kHz.

**LOW**

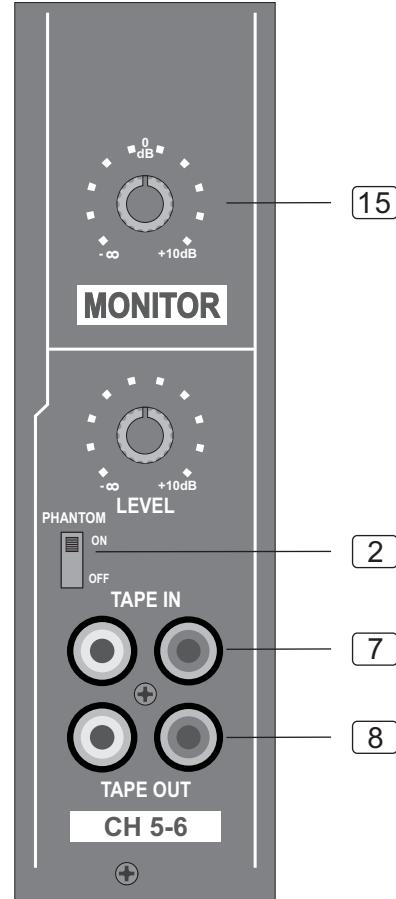
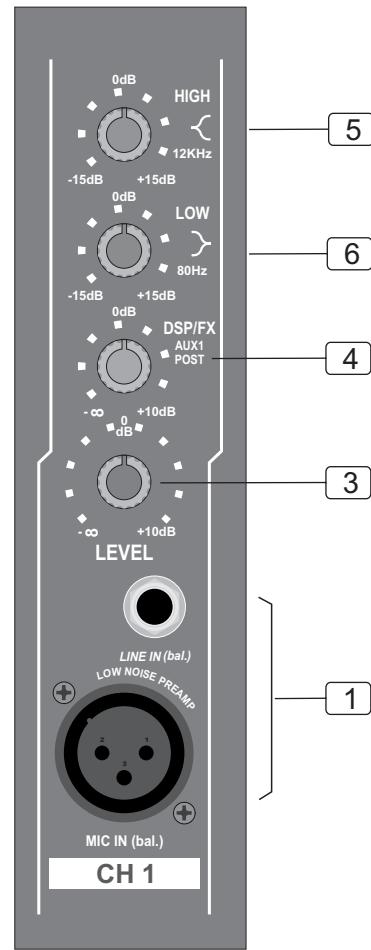
6

This is the bass control. It is used to boost male voice or kick-drum and bass guitar. Your system will sound much bigger than what it is. The gain range goes from -15dB to +15dB and the center frequency is 80Hz.

## 4.6 TAPE IN

7

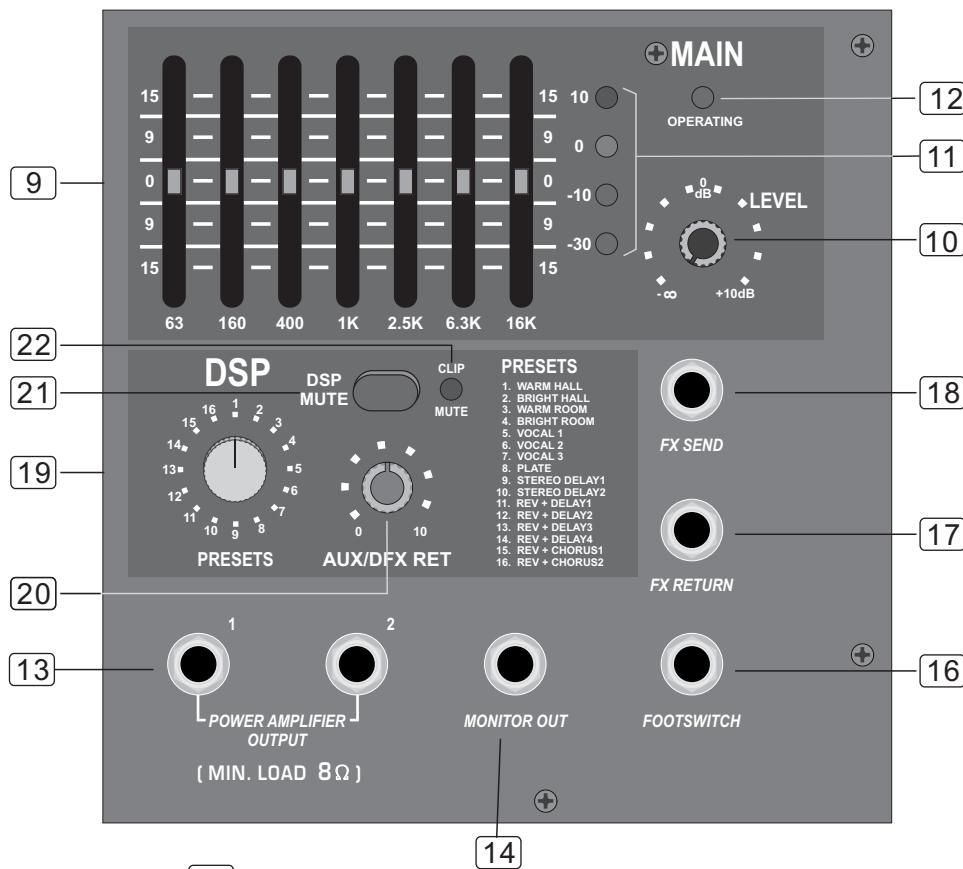
Your PBM4 features dual RCA jacks (left and right). If you wish to listen to your monitor from a tape recorder, DAT or cassette, please use these tape input jacks.



#### 4.7 TAPE OUT

8

Via these jacks, you can route the main out signal into a tape recorder or DAT for recording.



#### 4.8 GRAPHIC EQ

9

Your PBM4 is equipped with a graphic equalizer, and provides 7-band fader controls. Via these faders, you can boost or attenuate the selected frequency by 15dB at a preset bandwidth. When all faders are at the center position, the output of the equalizer is flat response. They are used to modify the frequency "contour" of a sound. The EQ function will be activated automatically as soon as you operate your PBM4.

#### 4.9 MAIN MIX LEVEL CONTROL

10

This control is used to adjust the overall volume of main mix output.

#### 4.10 MAIN MIX LEVEL LED

11

The 4-segment LED meter is used to indicate the main mix output level.

#### 4.11 OPERATING LED

12

This LED indicates when the power is switched on in your PBM4.

#### 4.12 POWER AMPLIFIER OUTPUT

13

The both jacks are used to output the main mix signal to external passive speaker, the minimum load is 8 ohms.

#### 4.13 MONITOR OUTPUT

14

This jack is used to connect the input of external monitor amplifier or active monitor speaker.

#### 4.14 MONITOR LEVEL CONTROL

15

This control is used to adjust the level of monitor output.

#### 4.15 FOOTSWITCH

16

You can connect an external footswitch to turn on/off the onboard effect module. It is a 1/4 " phone jack.

#### 4.16 FX RETURN

[17]

This jack is used to return the sound of an effect unit to the main mix. You can also use it as the extra auxiliary inputs.

#### 4.17 FX SEND

[18]

This jack is used to send out the signals from AUX bus.

#### 4.18 DSP SECTION

Your PBM4 features the special 16-preset digital effect, further details please refer to following content.

##### - PRESETS

[19]

Adjust this knob to select the right effect you wish to perform. There are total 16 options for you: WARM HALL, BRIGHT HALL, WARM ROOM, BRIGHT ROOM, VOCAL 1, VOCAL 2, VOCAL 3, PLATE, STEREO DELAY1, STEREO DELAY2, REV + DELAY1, REV + DELAY2, REV + DELAY3, REV + DELAY4, REV + CHORUS1 and REV + CHROUS2.

##### - AUX/DFX RET

[20]

This control is used to adjust the volume of FX RETURN.

##### - DSP MUTE

[21]

This switch is used to activate/deactivate the effect facility. Sometimes, you can also use the FOOTSWITCH jack for convenient operation.

##### - CLIP/MUTE LED

[22]

This LED lights up when the input signal is too strong. In case of the digital effect module being muted, this LED also lights up.

#### 4.19 REAR PANEL

##### - POWER ON/OFF

[23]

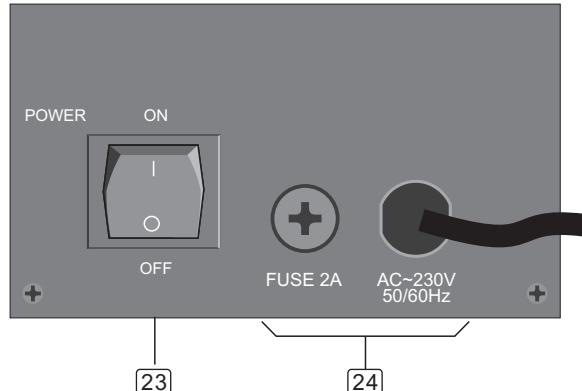
This switch is used to turn the main power ON/OFF.

##### - AC INLET with FUSE 2A

[24]

Use it to connect your PBM4 to the main AC with the supplied AC cord.

Please check the voltage available in your country and how the voltage for your PBM4 is configured before attempting to connect your PBM4 to the main AC.



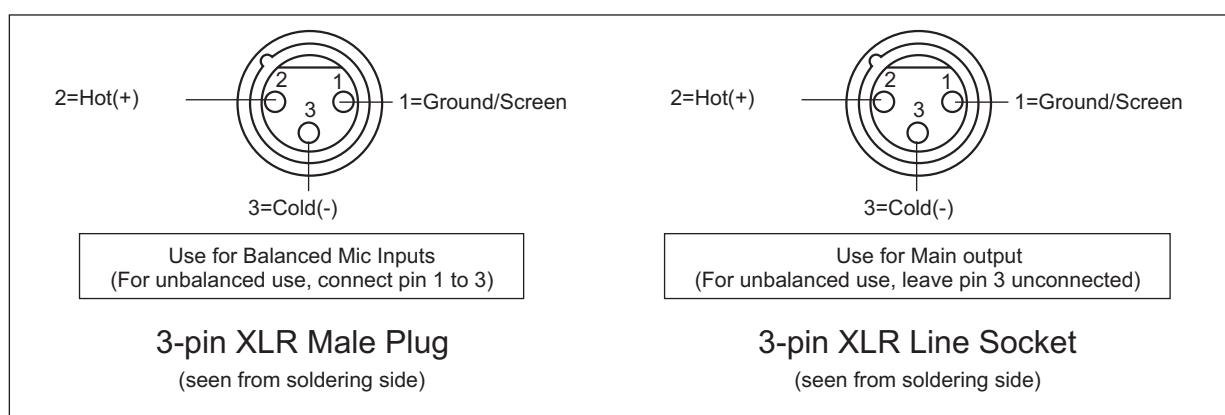
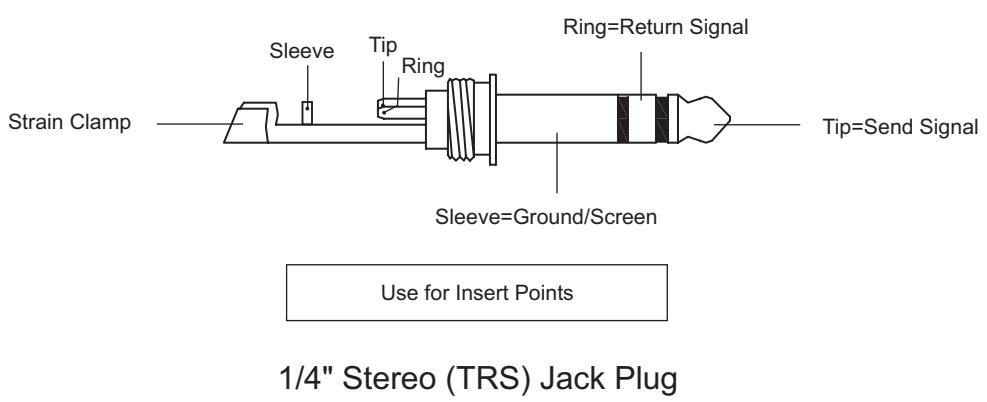
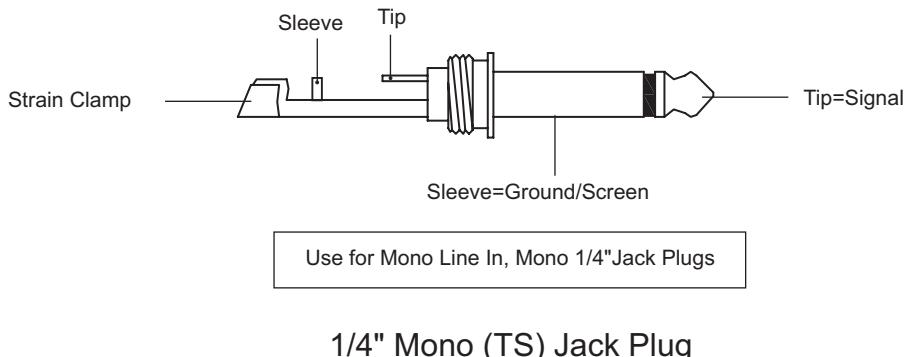
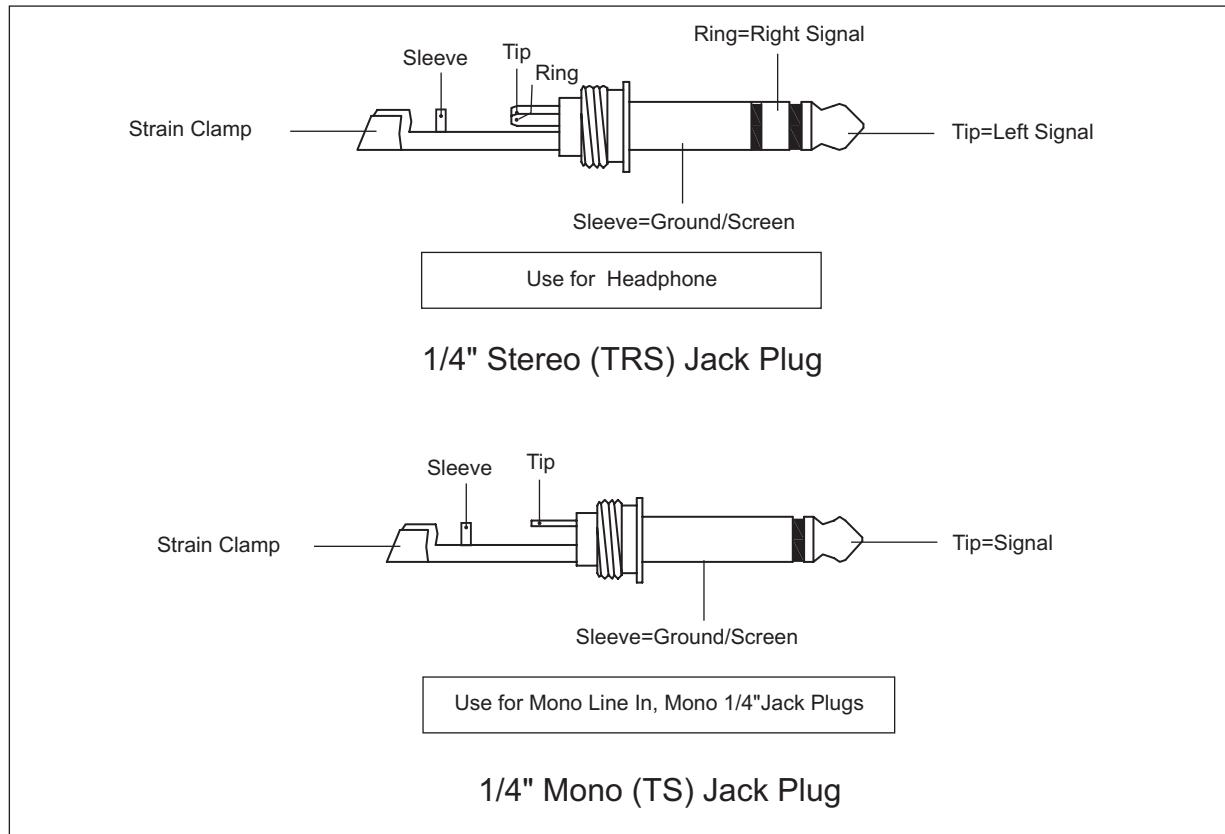
#### 5. INSTALLATION AND CONNECTION

Ok, you have got to this point and you are now in the position to successfully operate your PBM4. However, we advise you to read carefully the following section to be the real master of your own monitor. Not paying attention enough to the input signal level, to the routing of the signal and the assignment of the signal will result in unwanted distortion, a corrupted signal or no sound at all. So you should follow this procedure for every single channel.

- Turn down all input and output controls.
- Connect phantom powered microphones before switching on the +15Volt phantom power switch.
- Set the output level of your PBM4 at no more than 75%.
- Now, set the MONITOR level at no more than 50%. In this way you will be able to hear later what you are doing by connecting a pair of powered monitor speakers.
- Position EQ controls on middle position.
- Now repeat the same sequence for all input channels. The main LED meter could move up into the red section. In this case you can adjust the overall output level through the MAIN MIX LEVEL control.

## 5.1 AUDIO CONNECTIONS

You can connect unbalanced equipment to balanced inputs and outputs. Simply follow these schematics.



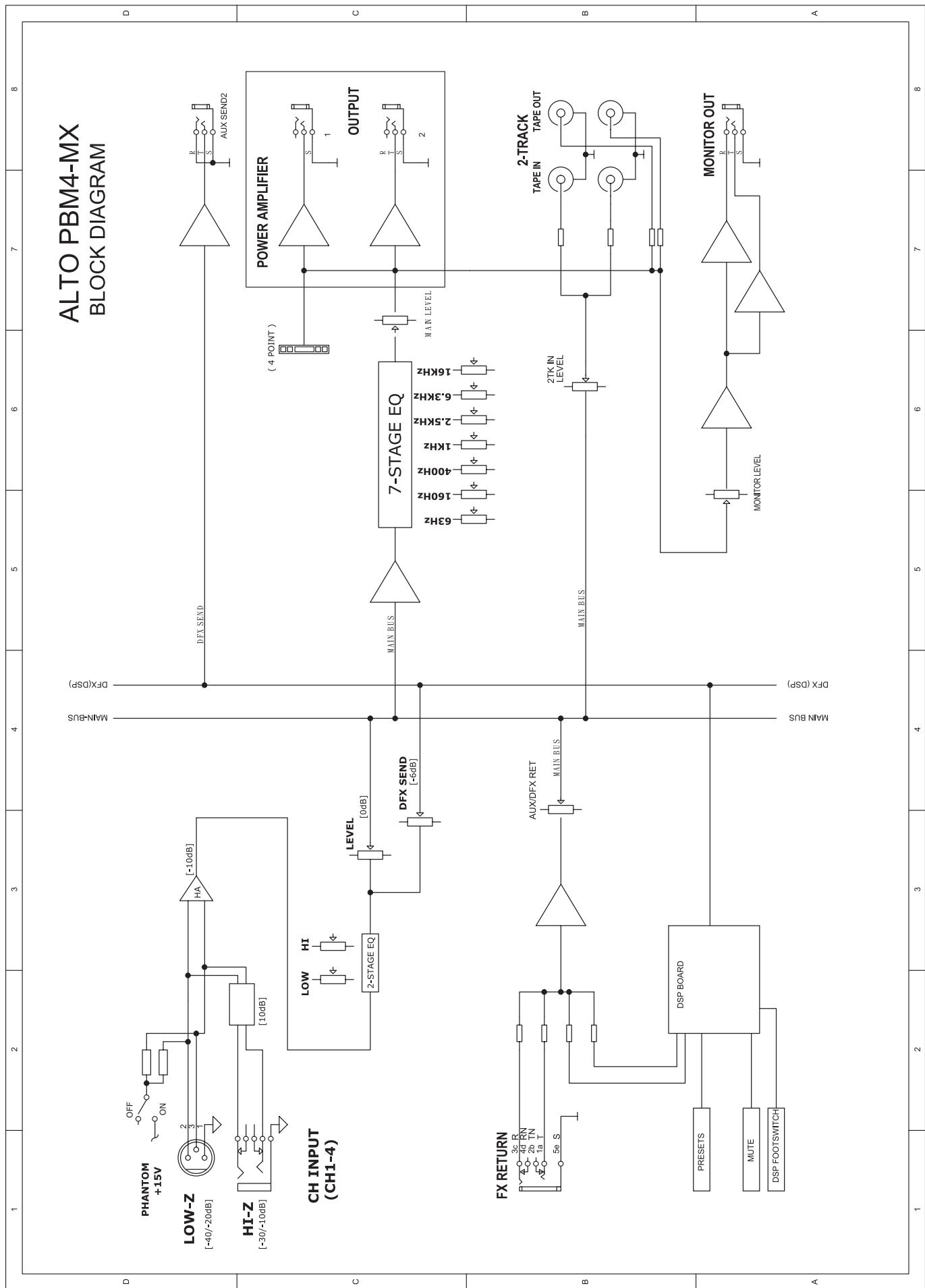
## 6. PRESET LIST

No.	Preset	Description	parameter
1	WARM HALL	Simulate a small acoustic space of the sound.	Rev. Decay time: 360ms Pre-delay: 45ms
2	BRIGHT HALL	Simulate a large acoustic space of the sound.	Rev. decay time: 290ms Pre-delay: 23ms
3	WARM ROOM	Simulate a small acoustic space of the sound.	Rev. decay time: 210ms Pre-delay: 45ms
4	BRIGHT ROOM	Simulate a studio room with many early reflections.	Rev. Decay time: 210ms Pre-delay: 23ms
5	VOCAL 1	Simulate a room with without delay time.	Rev. decay time: 450ms
6	VOCAL 2	Simulate a room with small delay time.	Rev. decay time: 240ms Pre-delay: 25ms
7	VOCAL 3	Simulate a small space with slight decay time.	Rev. decay time: 100ms Pre-delay: 114ms
8	PLATE	Simulate the transducers sound like classic bright vocal plate.	Pre-delay: 10ms Rev. decay time: 290ms
9	STEREO DELAY 1	Recreate the input sound on the stereo output with different time.	Period: 352ms
10	STEREO DELAY 2	Recreate the input sound on the stereo output with different time.	Period: 238ms
11	REV + DELAY 1	Delay with room effect.	Delay period: 326ms Rev. decay time: 290ms
12	REV + DELAY 2	Delay with room effect.	Delay period: 211ms Rev. decay time: 240ms
13	REV + DELAY 3	Delay with room effect.	Delay period: 375ms Rev. decay time: 210ms
14	REV + DELAY 4	Delay with room effect.	Delay period: 277ms Rev. decay time: 150ms
15	REV + CHORUS1	Simulate the sound effect achieved by rotating horn speakers and a bass cylinder.	Chorus rate: 3.67Hz Rev. decay time: 290ms
16	REV + CHORUS2	Simulate the sound effect achieved by rotating horn speakers and a bass cylinder.	Chorus rate: 3.02Hz Rev. decay time: 150ms

## 7. TECHNICAL SPECIFICATION

Input channels	Microphone Input	Electronically balanced, discrete input configuration
	Frequency response	10Hz to 55kHz, +/- 3dB
	Distortion(THD&N)	0.05% at +4dBu, 1kHz
	Gain	30dB
	SNR(Signal to Noise Ratio)	>94dB
	Line input	Electronically balanced
	Frequency response	10Hz to 55kHz, +/- 3dB
	Distortion(THD&N)	0.05% at +4dBu, 1kHz
	Gain	10dB
Impedances	Microphone Input	1.4kOhm
	Channel Insert return	2.5kOhm
	All other inputs	10kOhm or greater
	Tape out	1kOhm
	All other outputs	120Ohm
Equalization	Hi shelving	+/-15dB@12kHz
	Low shelving	+/-15dB@80Hz
DSP Section	A/D and D/A converters	24bit
	DSP resolution	24bit
	Type of effects	HALL, ROOM, VOCAL, PLATE, STEREO DELAY REV+DELAY, and REV+CHORUS combinations
	Presets	16
	Controls	16-position PRESET selector
		CLIP LED
		MUTE SWITCH with LED indicator
Main Mix Section	Noise(Bus noise)	Fader 0 dB, channels muted: -85dB (ref.: +4dBu)
		Fader 0 dB, all input channels assigned and set to
		UNITY gain: -81dB (ref.: +4dBu)
	MONITOR max out	+22dBu unbalanced, 1/4" jacks
Amplifier Section	FX Sends max out	+22dBu
	Output Power	150W RMS (Nominal power)
	Frequency Response	25HZ-20KHZ
Power supply	Main voltage	8 ohm
		USA/Canada 100 – 120V~, 60Hz
		Europe 210 – 240V~, 50Hz
		U.K./Australia 240V~, 50Hz
	Power Consumption	260 watts
	Fuse	100-120V~: T4A
		210-240V~: T2A
Physical	Dimensions	216.5x143.5x152.5mm(LxWxH)(8.5"x5.6"x6")
	Net Weight	9.5kg
	Shipping Weight	11.34 kg
	Volume	2.8CFT

## 8. BLOCK DIAGRAM



## **9. WARRANTY**

### **1. WARRANTY REGISTRATION CARD**

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to purport a more effective and efficient after-sales warranty service.

Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

### **2. RETURN NOTICE**

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

### **3. TERMS AND CONDITIONS**

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

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